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Case Report

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Bilateral capitellar fracture's: a case report

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ABSTRACT

Bilateral capitellar fractures are very rare injuries. If the anatomy is not restored properly, limitation in elbow movements and permanent disability are inevitable. Fixation of the capittal fracture to allow early movement is important. In prolonged immobilization, limitation of movement is encountered. We present a case of a 52 years old women affected by a shear fracture of a capitellum after fall from chair. Open reduction and internal fixation were performed for both capitellum fractures. Early rehabilitation was initiated to prevent joint motion contracture. As a result of the long-term follow-up of the patient, no limitations were observed in the activities of daily living. We suggest early rehabilitation following open reduction and internal fixation in patients admitted to us with capitellum fracture.

Keywords: Capitellum fracture, open reduction, headless screw, early rehabilitation

INTRODUCTION

Capitellar fractures are rare injury's.[1] They account only %1 of all elbow fracture's (isolaterd fracture of capitellum). These fracture often can occur after fall from outstretched hand.[2] The mechanism of the fracture is axial loading force admitted radial head to capitellum humeri. The clasification system most commonly used for capitellar fracture is Byran-Morrey.[3] There are three type of capitellar fracture has been described by Byran and Morrey. Type 1 fractures are coronal shear fractures that include most of the capitellum fractures. As a importance of the capitellum anatomic reduction and proper fixation is necessary to allow early elbow range of motion and preserve elbow from arthritis (fracture of the capitellum) There is a few bilateral capitellar fracture has been published in the literature yet.[1,4-6]

CASE REPORT

We report case 52 years old female who felt from chain on his out stretched hands. First examination; lateral sided elbow pain at both elbow, swelling and dermabrasion. Pain was triggered with motion. Bilateral elbow had range of motion restriction. Patient didn't fully extend his elbow both pasifly and actively. There was no laxity on both elbow. No neurovascular injury was noted during the administration to the emergency room (ER). We confirmed bilateral Type 1 hahn- steinthal capitellum fracture both on radiographs and CT scan (**Figure 1**).

A posterolateral Kocher approach was applied for anatomic reduction and stable fixation. Stable fixation maintained with two headless screw in convergent configuration, though to Posterior anterior direction and additional one screw at different direction to improve fixation strength (**Figure 2**). Before the definitive fixation, temporary k wire used to facilitate reduction. No early postoperative complication was reported.

Figure 1. Preoperative Xray and CT scan views

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Figure 2. Postoperative right and left elbow X-rays

Both elbows were immobilized for two weeks, and early intensive rehabilitation started after cast removal to preserve joint from stiffness. On the 12 week both fracture's healed without any reduction loses or implant failure. Trabecular unification presented at 12 weeks on control radiographs (Figure 3).

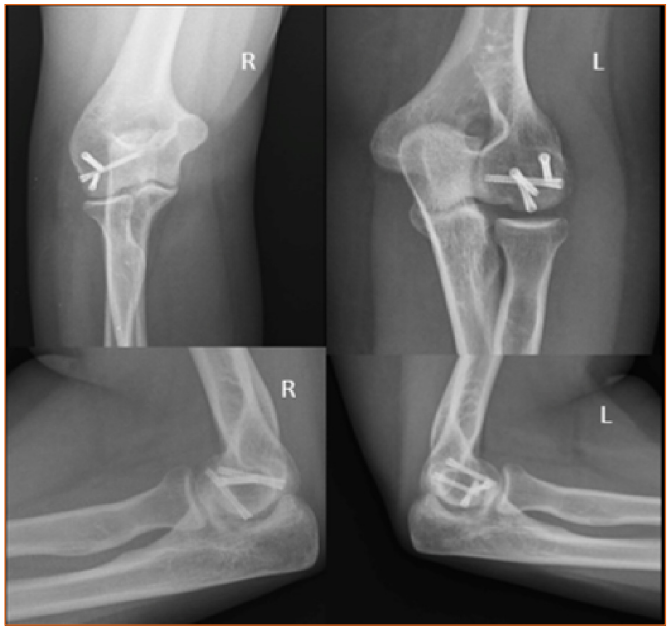

Figure 3. Postoperative 12. Week control X-ray

At final fallow up 6 moths postoperatively her both elbows had residual flexion contracture 5 degrees at both side, there was no flexion restriction on both side, there was no pain at elbows during the Daily activity she had satisfactory outcome from surgery (Figure 4).

Figure 4. Postoperative 8 month range of motion

DISCUSSION

Bilateral capitellum fractures are rarely encountered in daily orthopedic practice. Few cases of bilateral capitellar fractures have been reported in the literature. Capitellum fracture is relatively rare injury that can occur female patient more often due to superior carrying angle of elbow (hanh steinhanh fracture report of two cases)(fracture of the capitellum and trohlea) Type 1 hahn- steinthal fracture is the most common type that produced by axial loading on the outstretched hand.[7] If surgical treatment isn't performed precisely, displaced capitellum fracture block motion both flexion and extension.[7] Considering the cases treated for bilateral capitellar fractures, it was observed that the results were not satisfactory if anatomical reduction and early mobilization could not be achieved in cases followed up with closed reduction and plaster cast.[1] There are several treatment option for capitellar fracture such as; open reduction and internal fixation, fragment excision, closed reduction and cast immobilization, arthroplasty.[8,9] Few studies in literature have reported about fragment excision, according to this studies result of the fragment excision much similar to radial head. Short and mid-term results are acceptable. Fragment excision can be treatment option. If the fracture that are not amenable for open reduction and internal fixation.[10] It has been shown that poor results are obtained as a result of k-wire applications for capitellar shear fractures. The reason for this was that the k-wire was insufficient for fixation and prolonged immobilization was observed.[4]

Most of the studies advocate open reduction and stable fixation for large capitellar fracture. We prefer headless compression screw placement in posterior to anterior direction and additional screws at different direction to improve fixation strength. Better functional results with only one direction (posterior-anterior) screw placement has mentioned before at literature.[11] Mighell et al.[12] argued that when posterior- anterior direction prefer, it can disturb circulation of the capitellum and it can cause AVN. We didn't observe any AVN findings at our patient. Screw placement at anterior-posterior direction has been shown biomechanically superior to posterior-anterior direction.[13] In our patient we haven't seen any reduction lose or implant failure at fallow ups. We haven't seen any additional screw related complication. Ruchelsman et al.[14] recommends fixation with 2 screws in divergent direction in order to avoid iatrogenic fracture and to provide adequate fixation. In order to avoid iatrogenic fracture, attention should be paid to the distance between the two screws.[12] In our case, no iatrogenic fracture associated with the application of 3 screws was encountered. Additional plate fixation is recommended for more complex fracture patterns. In more complex fracture patterns, additional

plate fixation is recommended in cases where the posterior cortex is not intact.[15] There are studies showing that the use of biodegradable screws for capitellar shear fractures gives good clinical results.[16] In addition, arthroscopic approaches for capitellum fracture fixation have been described and good results have been reported.[17]

Limitation of the elbow range of motion is the most common complication of the capitellar fracture 3. Other common complication of capetellum fracture is arthritis. Especially after joint incongruity after inadequate reduction.[18] Arthritis range from %11-51 after capitellum fractures.[18] We havent seen any arthrosis finding at our fallow-ups for 2 years. Early range of motion seem to be the key to successful outcome. Early mobilization of the elbow can prevent elbow from joint stiffness.[7,19] Anatomic reduction, stable fixation and early mobilization is the key success of the capitellar shear fractures.

CONCLUSION

In the surgical treatment of capitellum fractures, attention should be paid to anatomical reduction and stable fixation. Early movement and rehabilitation can prevent joint movement limitations. Fixation of capitellum fractures with headless screw allows early rehabilitation and joint movement.

ETHICAL DECLARATIONS

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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